



VIRGINIA ACADEMY OF
SCIENCE, ENGINEERING AND MEDICINE

Presentation to JCOTS

December 4, 2019

Jim Aylor, President

Agenda

- Introduction to the Virginia Academy – J. Aylor
- 2018 Annual Summit Summary – J. Irish
- Proposal for a Study out of the Summit – A. Elias
- Opportunities for JCOTS Partnership – J. Aylor

- Formation: *incorporated as a non-profit in 2013 at the encouragement of Senator Mark Warner*
- Primary mission: *to provide non-partisan, objective scientific guidance to decision makers on the most difficult, challenging policy issues of the day*
- Secondary mission: *to increase the number of National Academy members from the Commonwealth*
- Membership: *National Academy members and other selected individuals that live or work in the Commonwealth (**members work for no remuneration**)*
 - Academic institutions: *UVA, Virginia Tech, VCU, GMU, EVMS, Lynchburg College, W&L*
 - Federal agencies: *NASA Langley, NIH, NRAO, NSF, NRL, DoD, CNRL*
 - Corporations: *Dominion Energy, Aurora Flight Systems, Lockheed Martin, Northrop Grumman, numerous former CEOs*
- Similar Organizations: *(all are nonprofit organizations; some are created by legislation)*
 - The Academy of Medicine, Engineering, and Science of Texas (TAMEST): *Funded by member institution and endowment*
 - Washington State Academy of Sciences: *Funded by state and some individual member dues*
 - California Council on Science and Technology (CCIT): *Funded by state*
 - Connecticut Academy of Science and Engineering: *Funded by membership and other sources*

- Programs: *Annual Summits (6) and a Study*
 - 2017 Summit: *Emerging Infections and Preparedness*
 - 2018 Summit: *Securing Prosperity in the Coastal Zone*
 - 2017 Study: *AEROSPACE IN VIRGINIA: An Opportunity for Economic Growth*
- New Program: *Commonwealth of Virginia Engineering and Science Policy Fellows*
 - Science and Engineering graduate students placed in key State agencies and offices for the three summer months annually



VIRGINIA ACADEMY OF
SCIENCE, ENGINEERING AND MEDICINE



SECURING PROSPERITY IN THE COASTAL ZONE

RICHMOND, VIRGINIA | NOV 7-8

Dr. Jennifer Irish, Summit Co-Chair
Virginia Tech

Briefing for Joint Commission on Technology and Science
December 4, 2019

Unified Organization

Organizing Committee

U.S. Senator Mark Warner (Co-Host)

Jennifer Irish (Co-Chair, Virginia Tech)

Robert Weiss (Co-Chair, Virginia Tech)

Patricia Dove (VASEM)

Thomas Young (VASEM)

Gen. Lester Lyles, Ret. (VASEM)

Elizabeth Andrews (William & Mary)

Larry Atkinson (Old Dominion University)

Jonathan Goodall (University of Virginia)

Robert Latour (Virginia Institute of Marine Science)

Troy Hartley (NOAA/Virginia Sea Grant)

Celso Ferriera (George Mason University)



Summit Goal

To move towards a holistic conversation about promoting prosperity in Virginia's coastal zone and its role in the Nation's well-being, **across geographic and government scales.**



Summit Format

To begin meaningful dialogues on **assets**, **stressors**, and **opportunities** related to coastal prosperity.

Assets

Trained workforce
Port of Virginia
Military installations
Industry
headquarters
One-of-a-kind
estuary

Stressors

Population growth
Sea level rise
Aging infrastructure

Opportunities

Innovation
Legal & policy
changes
Strategic economic
growth

Summit Format

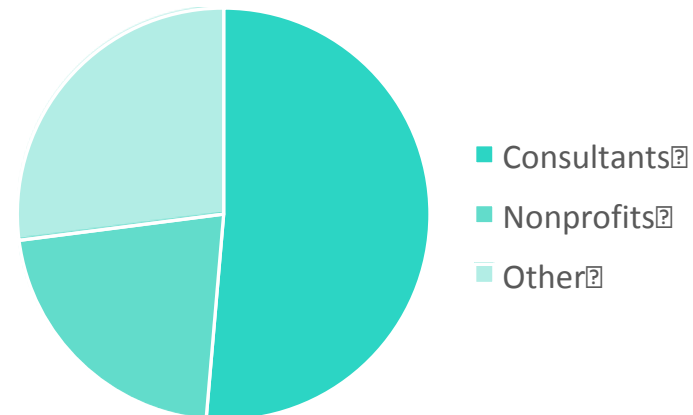
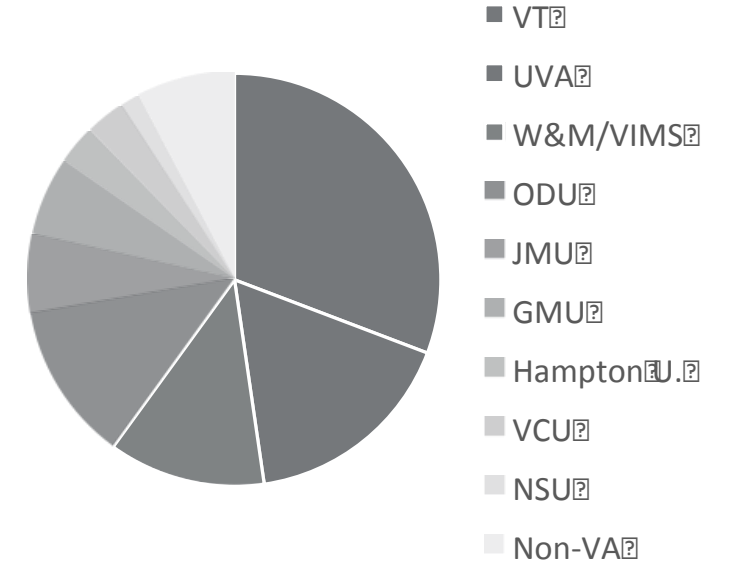
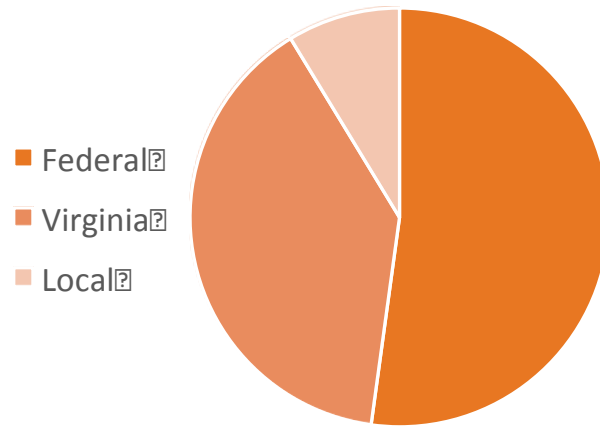
To begin meaningful dialogues on **assets**, **stressors**, and **opportunities** related to coastal prosperity.

Inform future VASEM-led study whose specific focus will emerge through the Summit.



Attendee Diversity

■ Academia ■ Industry ■ Government



Presenter Diversity

Wind Power Business & Legal Risks
Public Health Ports & Commerce
Resilience Oysters Storm Surge Community Vulnerability
Wetlands Rainfall Flooding Fisheries Sea Level Rise
Collaborative Governance Louisiana Coastal Master Plan
Structural Design Economic Prosperity
Cultural History of Virginia's Barrier Islands
Natural Infrastructure Resilience Wetlands
Storm Surge Aerospace Recurrent Flooding
Use-Inspired Science Ports Adaptation
Precipitation & Groundwater Resilience Government
National Security Climate Ready Boston
Ecosystems & Economy Society & Health

Invited Leaders

Invited Experts

Faculty in Virginia

Presenter Diversity

Business & Government Leaders



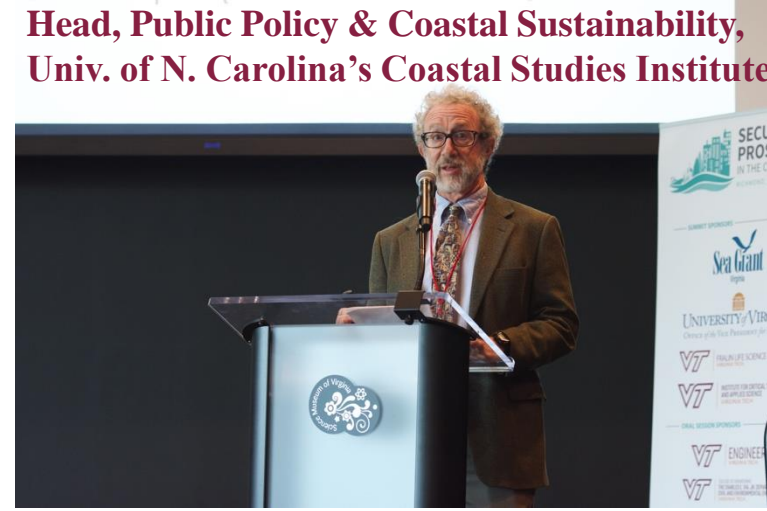
Presenter Diversity

Scientific Leaders

**Director, Emerging Pathogens
Institute, University of Florida**



**Head, Public Policy & Coastal Sustainability,
Univ. of N. Carolina's Coastal Studies Institute**



**Vice President & Director (former),
RAND Justice, Infrastructure, &
Environment**



The Conversation



The Conversation

- “A lot of private sector investment is dependent on what people are hearing. [We need to] give good information ... to help people make good business decisions and have confidence to make good decisions in operational safety. How am I going to do my business 20 or 30 years down the road?”



The Conversation

- “Good recovery strategies are necessary... Making sure people can continue their daily lives as soon as possible--our livelihoods are...connected with the coast.”



The Conversation

- “How do we quantify and develop economic value to fully understand the positive impact to our economy created by green infrastructure and by natural and nature-based features in the context of developing our future cities?”

- A. Phillips



Next Steps

VASEM-led study to aid the Commonwealth in prioritizing investments in securing coastal prosperity.

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VIRGINIA ACADEMY OF
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COASTAL FLOODING: HAZARDS, RISKS AND MITIGATIONS

Dr. Antonio Elias
Secretary-Treasurer, VASEM
December 4, 2019

COASTAL FLOODING: HAZARDS, RISKS AND MITIGATIONS



- The Virginia Government is Appropriately Concerned About Harmful Impacts of Flooding Hazards to the Commonwealth's Safety, Quality of Living and Prosperity
 - Governor Northam's Executive Order No. 24 (2018) Dated 2 November
 - Joint Subcommittee on Coastal Flooding Established in 2016 (and its Predecessor Established in 2014)
- Prudent Governance and Allocation of Scarce Resources Require Acquisition and Understanding of Factual Data on:
 - Types, Sources and Hazards of Flooding and Flooding-like Events
 - Associated Risks (Probability and Severity of Harmful Impacts and Other Metrics, such as Time Outlook)
 - Potential Remediation and Mitigation Alternatives, their Effectiveness, Costs and Time Spans
 - Also Their Practicality, Acceptability, Residual Risks, Negative Side Effects, etc.
- Since Its Establishment in 2016, the Joint Subcommittee Was Briefed with Data from a Number of Sources during its 14 Meetings (From 7 July 2016 To 19 August 2019)
 - 40 Presentations (36 Archived) from 41 Briefers representing 30 Organizations
 - Predecessor Subcommittee Briefed 30 Times in 8 Meetings (13 Archived Presentations)

COASTAL FLOODING: LIMITATIONS OF AVAILABLE DATA



- In Spite of Its Volume, the Data Briefed to the Subcommittee Suffer from Uneven Detail, Structure and Coverage
 - Some are Veritable Monographs, Others Marketing or Bragging
 - Some Focus on Hazards, Others on Risks, Others Confuse the Two
 - Little or No “Analysis of Alternatives” ... Hard to Compare Across Presentations or Get a Sense of the Potential Costs/Benefits
 - Hard to Tell if All Relevant Hazards and Risks Have Been Covered
- Most Members of the Virginia Academy (VASEM) Have Vast Knowledge and Experience with Disciplined and Focused Data Gathering, Sifting and Analysis, Including Comparisons
- Some VASEM Members Are Recognized Subject Matter Experts on Flooding Hazards and Risks ... Also They Have Professional Relations with the Majority of In-state and National Experts
- VASEM Can Readily and in a Cost-Effective Manner Organize, Sift and Analyze Both the Data Already Given to the Subcommittees as Well as Updated, More Complete or New Data from the Presenting Organizations and Additional Sources

COASTAL FLOODING: PROPOSED STUDY



- If Asked by the Virginia General Assembly at the End of the 2020 Session, VASEM Can Promptly Empanel a Working Group Composed of VASEM Members and Volunteer Invited Subject Matter Experts ... Will Meet Periodically During 2020 to Discuss the Available Data and Receive New Data and Answers to Specific Question from Relevant Organizations
- The Working Group will Organize, Evaluate and Report the Data Focusing On:
 - What Flood or Flood-like Hazards Are Expected to Occur Where, Over What Span of Time and with What Probabilities of Occurrence and Duration
 - Type, Extent, Probability, Economic and Other Costs of the Risks Associated With These Hazards
 - Alternative Remediation or Mitigation Options, their Costs and Effectiveness
 - Degree to Which the Above are Well or Poorly Known
- The Report Will be Made Available in Time for the 2021 Prefiling

A PLAN FOR JCOTS/VIRGINIA ACADEMY PARTNERSHIP



- Planning partnership
 - The Virginia Academy will prepare an annual trends study to identify key science and technology trends and possible policy implications for the Commonwealth
 - The Virginia Academy will provide a *Commonwealth of Virginia Engineering and Science Policy Fellow* for use by JCOTS
- Annual study development
 - The Virginia Academy will work with JCOTS members and staff to identify a topic for comprehensive research study
 - Money will be requested during the budgeting process and then available once a suitable topic is determined

Thank you